Top Cables and Conductors Needs

- **#1 - Conduct materials research to increase the transmission corridor power density with the goal of achieving power densities for cables and conductors of 50x ACSR by 2025**
- **#2 – Develop overhead conductor to increase capacity of existing corridors by at least 2x with same ACSR characteristics (sag, temp). Achieve power densities 5x ACSR at current costs by 2010**
- **#3 – Demonstrate/showcase installation of high-temperature, low-sag conductors (include value proposition)**
- **#4 – Develop methodology (diagnostics) to assess in-situ condition of underground cable.**
  - End of life
  - Partial discharge (energized)
  - Dielectric strength

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- #5 – Install real-time monitoring on transmission to determine real-time ratings and sag to improve capacities and reliability and prevent exceeding clearances – on long lines (100-200 miles)
- #6 – Develop less expensive (trenchless) directional boring technologies for new and replacement installations and reduce O&M cost of underground cables
- #7 – Develop qualification standards for high-temperature, low-sag conductors. Address reliability and environmental concerns
- #8 – Prove out (validate) dynamic thermal circuit-rating technologies for better operations and secure acceptance of DTCR tools and techniques into RTOs, ISOs, and ITCs

Key Themes and Discussion Points

- Increased capacities cause other impacts: reliability, EMF, other
- Need is now. How long to achieve advanced performance (degradation, life issues)
- Need to look beyond normal conditions to heavy duty stressed conditions and impact on tower design and reliability
- Promising products/technologies exist (close to commercial).

  Need to get utility acceptance and use; then implement continuous improvement,
- Reliability and cost effectiveness
- Interpretation of data: transform information into knowledge
- Another area to explore is high voltage UG systems in addition to HTS.